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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,625	01/28/2004	Srinivasamohan Narayanan	SL1207	5653

7590

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BP America Inc.
Docket Clerk
BP Legal, M.C 5 East
4101 Winfield Road
Warrenville, IL 60555

EXAMINER

MENZ, DOUGLAS M

ART UNIT

PAPER NUMBER

2891

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/767,625

Applicant(s)

NARAYANAN ET AL.

Examiner

Douglas M. Menz

Art Unit

2891

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-16, 22-27, 29 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-21 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Newly submitted claims 29-30 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Claims 29-30 are directed to non-elected species of the invention.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 29-30 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17, 21 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Fraas et al. (US 5091018).

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Regarding claim 17, Fraas et al. (US 5091018) discloses a process for making a photovoltaic device using a substrate comprising silicon doped with a first dopant (Col. 6, lines: 18-30), the process comprising the steps of:

(a) forming a first layer (64, Fig. 8A) of the substrate (61, Fig. 8A), the first layer comprising a second dopant (p-type) of a conductivity type opposite the first dopant (n-type) (Col. 6, lines: 58-65);

(b) forming a surface coating (62, Fig. 8A) disposed over the substrate such that a back surface of the substrate is free or substantially free of the surface coating (Col. 6, lines: 36-40); and

(c) removing the second dopant from the back surface (65, Fig. 8A-B) such that the back surface is free or substantially free of the second dopant (Col. 7, lines: 1-18).

Regarding claim 21, Fraas further discloses wherein the surface coating (62) comprises silicon nitride (Col. 6, lines: 36-39).

Regarding claim 28, Fraas further discloses wherein the surface coating (62) is formed such that only a back surface of the substrate is free or substantially free of the surface coating. Fraas states that the surface coating 62 is formed over the entire upper surface of substrate 61, which reads on claim 28, after this, the surface coating 62 is treated to form openings (Col. 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fraas et al. (US 5091018) in view of Rittner (US 4135950).

Regarding claim 18, Fraas discloses the process of claim 17 as mentioned above. However, Fraas does not disclose further comprising the step of texturing the substrate.

Rittner discloses a silicon solar cell structure wherein the substrate is textured (Fig. 2 and Col. 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to texture Fraas's substrate as taught by Rittner.

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because Rittner explicitly discloses that such features are for optimizing the power output of the solar cell throughout its design lifetime (Col. 2, lines: 55-65).

Regarding claim 19, Rittner further discloses the process of removing the texture from the back surface such that the back surface is substantially smooth (Fig. 2 and Col. 1, lines: 54-55 and Col. 2, lines: 40-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the texture from the back surface such that the back surface is substantially smooth because Rittner explicitly discloses such a step in the process of forming an electron reflecting region (Col. 2, lines: 40-46).

Regarding claim 20, Rittner further discloses the step of forming a back surface field (p+ region, Fig. 2 and Col. 2, lines: 40-47). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate a back surface field into Fraas's device for the purpose of increasing the efficiency of the device. To further support the Examiner's position that Rittner's p+ region constitutes a back surface field used to increase the efficiency of the device see Mowles (US 6541695) (Fig. 2A and Col. 10, lines: 5-20).

Response to Arguments

Applicant's arguments filed 1/6/06 have been fully considered but they are not persuasive. Applicant argues that Fraas does not disclose a process wherein a surface

coating is disposed as recited in Claim 17 by arguing limitations that are not claimed. The Examiner's position is that Fraas does indeed disclose the process as claimed in claim 17.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas M. Menz whose telephone number is 571-272-1877. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on 571-272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DM



BRADLEY K. SMITH
PRIMARY EXAMINER